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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,233	07/25/2002	Jinliang Qiao	U 013868-3	9932
140 7590 LADAS & PARRY 26 WEST 61ST STREET NEW YORK, NY 10023			EXAMINER FEELY, MICHAEL J	
		ART UNIT 1712	PAPER NUMBER	
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS		MAIL DATE 12/28/2006	DELIVERY MODE PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/049,233	QIAO ET AL.	
	Examiner	Art Unit	
	Michael J. Feely	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 11 December 2006.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1,6,7,9,10,12,14,16 and 18-29 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1,6,7,9,10,12,14,16 and 18-29 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 25 July 2002 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application
 6) Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 11, 2006 has been entered.

Pending Claims

2. Claims 1, 6, 7, 9, 10, 12, 14, 16 and 18-29 are pending.

Response to Amendment

3. The rejection of claims 9, 10, 16, and 24 under 35 U.S.C. 103(a) as being unpatentable over Coran et al. (US Pat. No. 5,889,119) has been withdrawn.

4. The rejection of claims 1, 6, 7, 12, 14, and 18-23 under 35 U.S.C. 103(a) as being unpatentable over Coran et al. (US Pat. No. 5,889,119) stands for the reasons of record.

Claim Rejections - 35 USC § 102/103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 9, 10, 16, 24, and 29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Coran et al. (US Pat. No. 5,889,119).

Regarding claims 9, 10, 16, 24, and 29, Coran et al. disclose: (9) a process for preparing a fully vulcanized thermoplastic elastomer (Abstract; column 3, lines 21-64), which comprises the steps of (i) providing a fully vulcanized powdery rubber as a first starting material (column 3,

lines 54-64), and (ii) blending the fully vulcanized powdery rubber with plastic as a second starting material, wherein the weight ratio of the fully vulcanized powdery rubber to the plastic is 30:70 to 75:25 (column 3, lines 21-64); (10) wherein the weight ratio of the fully vulcanized powdery rubber to plastic is 50:50 to 75:25 (column 3, lines 21-32); (16) wherein said plastic comprises at least one polymer or copolymer thereof selected from the group consisting of *see claim for list* (column 4, line 62 through column 5, line 2); (24) wherein the first starting material consists essentially of the fully vulcanized powdery rubber (column 3, lines 21-64) and the second starting material consists essentially of the plastic (column 3, lines 21-64); and (29) wherein said fully vulcanized powdery rubber comprises at least one of *see claim for list* (column 6, lines 5-17).

The teachings of Coran et al. do not disclose, *wherein the fully vulcanized powdery rubber is prepared by vulcanizing a corresponding rubber latex with irradiation*. However, it should be noted that this is a product-by-process limitation imbedded in the process claim – it is not an actual process step. In light of this, it has been found that, “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process,” – *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Therefore, without a showing of unexpected results, the fully vulcanized thermoplastic elastomer of Coran et al. would have been the same as or an obvious variation of the instantly claimed invention, regardless of how the fully vulcanized powdery rubber was prepared.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
8. Claims 1, 6, 7, 12, 14, 18-23, and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coran et al. (US Pat. No. 5,889,119).

Regarding claims 1, 6, 7, 18-21, 23, 25, and 26, Coran et al. disclose: (1, 19 & 25) a fully vulcanized thermoplastic elastomer comprising a rubber phase and a plastic matrix (Abstract; column 3, lines 21-64), wherein an average particle size of the rubber phase of said fully vulcanized thermoplastic elastomer is *preferably less than about 2μ* (column 3, lines 21-64); wherein the weight ratio of rubber phase to plastic is 30:70 to 75:25 (column 3, lines 21-32); (6) wherein said rubber has a gel content of at least 60% by weight (column 3, lines 54-64: *inherent of "ground pre-vulcanized particles"*), (21) wherein said rubber has a gel content of at least 75% by weight (column 3, lines 54-64: *inherent of "ground pre-vulcanized particles"*); (7) wherein the plastic matrix is at least one of *see claim for list* (column 4, line 62 through column 5, line 2); (18) a method of preparing a molded article with the vulcanized thermoplastic elastomer of claim 1 (column 8, lines 3-8); (20) wherein the weight ratio of rubber phase to the plastic matrix is 50:50 to 75:25 (column 3, lines 21-32); and (23) wherein the fully vulcanized thermoplastic elastomer is prepared by a process comprising the steps of: (i) providing a fully vulcanized powdery rubber (column 3, lines 54-64),

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and (ii) blending the fully vulcanized powdery rubber with a plastic, wherein a weight ratio of the fully vulcanized powder rubber to the plastic is 30:70 to 75:25 (column 3, lines 21-64); and

(26) wherein the rubber phase of said fully vulcanized thermoplastic elastomer comprises at least one of *see claim for list* (column 6, lines 5-17).

Coran et al. do not explicitly disclose: (1) wherein the shape of the rubbery phase (fully vulcanized powdery rubber) is spheroidic; however, this appears to be an inherent feature of the ground/powdered rubber particles. It should be noted that *spheroidic* does not require an actual spherical shape. A spheroid is shaped *like* a sphere *but is not perfectly round*:

Main Entry: **spher·oid** ►

Pronunciation: 'sfir- "oid, 'sfer-

Function: *noun*

: a figure resembling a sphere; also : an object of approximately spherical shape

- **spher·oi·dal** ►/sfir-'roi-d&l/ also **spheroid** *adjective*

- **spher·oi·dal·ly** ►/-d&l-E/ *adverb*

Applicant fails to set forth or define the *approximate spherical nature* of these powdery particles, and it appears to be a property determined by visual judgment. This visual judgment depends on perspective. To the ordinary eye, powder with an average particle size of less than 2 microns (or less) would appear to be spherical or *spheroidic*. This visual judgment depends upon the magnification at which the powder is being analyzed. Even what Applicant describes as sphere-like at one magnification may be less sphere-like at a higher magnification. Accordingly, one could argue that any powder having an average particle size of 2 microns (or less) is inherently *spheroidic* to some degree, depending on the magnification at which it is viewed and the viewer's acceptable *approximate spherical nature*. Even if these "particles" were deformed or irregular in shape, they would inherently resemble a sphere to some extent. Furthermore, non-

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spheroidic materials, such as flakes, are typically described by aspect ratios. The teachings of Coran et al. say nothing about an aspect ratio, which further suggests that their pulverized particles are *spheroidic*.

Therefore, if not explicitly taught by Coran et al., then the ground/powdered rubber particles of Coran et al. would have been inherently spheroidic.

Coran et al. also fail to explicitly disclose: (1) wherein the average particle size of the rubber phase is $0.02\mu \sim 1\mu$; (19) wherein the average particle size of the rubber phase is $0.05\mu \sim 0.2\mu$; and (25) wherein the average particle size of the rubber phase is $0.05\mu \sim 0.5\mu$. Rather, they disclose, “Where the binder rubber is vulcanized or crosslinked, the crosslinked binder rubber should have a number average diameter of less than 50μ , preferably less than 25μ , more preferably less than 10μ , even more preferably less than 5μ , and still more preferably less than 2μ ...the addition of pre-vulcanized particles ground to appropriate size is contemplated” (column 3, lines 54-64). This most preferable range is an open-ended range that encompasses the claimed ranges.

In light of this, it has been found that, “[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness,” – *See MPEP 2144.05*. Furthermore, Applicant fails to show criticality for these claimed ranges.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to select an average particle size of the rubber phase of $0.02\mu \sim 1\mu$ or $0.05\mu \sim 0.5\mu$ or $0.05\mu \sim 0.2\mu$ in the composition of Coran et al. because Coran et al. disclose a range of *preferably less than 2μ* , which encompasses the somewhat narrower claimed ranges.

Finally, Coran et al. fail to disclose, *wherein the fully vulcanized powdery rubber is prepared by vulcanizing a corresponding rubber latex with irradiation*. However, it should be noted that this is a product-by-process limitation. In light of this, it has been found that, “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process,” – *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Therefore, without a showing of unexpected results, the fully vulcanized thermoplastic elastomer of Coran et al. would have been the same as or an obvious variation of the instantly claimed invention, regardless of how the fully vulcanized powdery rubber is prepared.

Regarding claims 12, 14, 22, 27, and 28, the teachings of Coran et al. are set forth above and incorporated herein to satisfy these claim limitations.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned

with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1, 6, 7, 9, 10, 12, 14, 16 and 18-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the combined limitations of claims 1-6 and 18 of U.S. Patent No. 6,838,490. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The combined limitations of the patented claims anticipate the instantly claimed invention with the following exceptions: (1) the patented claims fail to explicitly set forth the claimed weight ratios of rubber phase to plastic matrix (*see claims 1, 9, 10, 20*); (2) the patented claims fail to explicitly set forth a *spheroidic* rubber phase (*see claims 1 & 12*); (3) the patented claims fail to explicitly set forth specific polymer matrix materials (*see claims 7 & 16*); and (4) the patented claims fail to explicitly disclose a method of preparing a molded article (*see claim 18*).

With respect to (1), it would have been obvious to one of ordinary skill in the art to optimize this ratio because the rubber is being added to *toughen* the polymer matrix. In other words, this ratio is a result-effective variable – *see MPEP 2144.05*.

With respect to (2), this *spheroidic* rubber phase would have been inherently present due to the irradiation-vulcanization of latex.

With respect to (3), one of ordinary skill in the art would have immediately envisaged these polymer materials as the (thermoplastic) polymer matrix being toughened. Alternatively, this would have been obvious in light of the teachings of Coran et al.

With respect to (4), one of ordinary skill in the art would have immediately envisaged this molding process, in light of forming a toughened material. Alternatively, this would have been obvious in light of the teachings of Coran et al.

11. Claims 1, 6, 7, 9, 10, 12, 14, 16 and 18-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the combined limitations of claims 1-16 of U.S. Patent No. 6,998,438. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The combined limitations of the patented claims anticipate the instantly claimed invention with the following exceptions: (2) the patented claims fail to explicitly set forth a *spheroidic* rubber phase (*see claims 1 & 12*); and (4) the patented claims fail to explicitly disclose a method of preparing a molded article (*see claim 18*).

With respect to (2), this *spheroidic* rubber phase would have been inherently present due to the irradiation-vulcanization of latex.

With respect to (4), one of ordinary skill in the art would have immediately envisaged this molding process, in light of forming a toughened material. Alternatively, this would have been obvious in light of the teachings of Coran et al.

12. Claims 1, 6, 7, 9, 10, 12, 14, 16 and 18-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the combined limitations of claims 1-6, 22, and 23 of U.S. Patent No. 6,423,760. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The combined limitations of the patented claims anticipate the instantly claimed invention with the following exceptions: (1) the patented claims fail to explicitly set forth the

claimed weight ratios of rubber phase to plastic matrix (*see claims 1, 9, 10, 20*); (2) the patented claims fail to explicitly set forth a *spheroidic* rubber phase (*see claims 1 & 12*); (3) the patented claims fail to explicitly set forth specific polymer matrix materials (*see claims 7 & 16*); and (4) the patented claims fail to explicitly disclose a method of preparing a molded article (*see claim 18*).

With respect to (1), it would have been obvious to one of ordinary skill in the art to optimize this ratio because the rubber is being added to *toughen* the polymer matrix. In other words, this ratio is a result-effective variable – *see MPEP 2144.05*.

With respect to (2), this *spheroidic* rubber phase would have been inherently present due to the irradiation-vulcanization of latex.

With respect to (3), one of ordinary skill in the art would have immediately envisaged these polymer materials as the (thermoplastic) polymer matrix being toughened. Alternatively, this would have been obvious in light of the teachings of Coran et al.

With respect to (4), one of ordinary skill in the art would have immediately envisaged this molding process, in light of forming a toughened material. Alternatively, this would have been obvious in light of the teachings of Coran et al.

Response to Arguments

13. Applicant's arguments filed December 11, 2006 have been fully considered but they are not persuasive.

(1) Applicant argues that the skilled artisan would have recognized that the granulated pre-vulcanized rubbers of Coran et al. can not be of a sphere-like shape; however they fail to say or show why this is so.

As set forth above, Applicant fails to set forth or define the *approximate spherical nature* of these powdery particles, and it appears to be a property determined by visual judgment. This visual judgment depends on perspective. To the ordinary eye, powder with an average particle size of less than 2 microns (or less) would appear to be spherical or *spheroidic*. This visual judgment depends upon the magnification at which the powder is being analyzed. Even what Applicant describes as sphere-like at one magnification may be less sphere-like at a higher magnification. Accordingly, one could argue that any powder having an average particle size of 2 microns (or less) is inherently *spheroidic* to some degree, depending on the magnification at which it is viewed and the viewer's acceptable *approximate spherical nature*. Even if these "particles" were deformed or irregular in shape, they would inherently resemble a sphere to some extent. Furthermore, non-*spheroidic* materials, such as flakes, are typically described by aspect ratios. The teachings of Coran et al. say nothing about an aspect ratio, which further suggests that their pulverized particles are *spheroidic*.

(2) Applicant argues that the product-by-process limitations yield improved tensile strength and elongation at break, good appearance, good rheological processing performance, and the like.

As set forth above, it has been found that, “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process,” – *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Therefore, without a *showing* of unexpected results, the fully vulcanized thermoplastic elastomer of Coran et al. would have been the same as or an obvious variation of the instantly claimed invention, regardless of how the fully vulcanized powdery rubber is prepared.

For these reasons, Applicants’ arguments are not persuasive.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael J. Feely
Primary Examiner
Art Unit 1712

December 21, 2006

**MICHAEL FEELY
PRIMARY EXAMINER**